

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Previously Presented) A method of refrigerant level monitoring in a refrigerant circuit of an air-conditioning or heat-pump system having a compressor and a refrigerant which may, depending on the operating point, be operated in the supercritical range, the method comprising:

at least in-operation level monitoring with the compressor switched on, measuring the refrigerant superheat ( $dT_{ü}$ ) at the evaporator of the system, and determining whether the measured superheat ( $dT_{ü}$ ) lies above a predetermined limiting value ( $dT_{üG}$ ), as an indication of improper filling, wherein, the refrigerant superheat ( $dT_{ü}$ ) at the evaporator is measured by using the difference between a temperature ( $T_{LVA}$ ), measured on the evaporator outlet side, of a medium led over the evaporator for the purpose of cooling the medium, and the refrigerant temperature ( $T_{KVE}$ ) measured on the evaporator inlet side.

2. (Cancelled)

3. (Original) A method as claimed in claim 1, wherein the system comprises an air-conditioning system employing  $CO_2$  as refrigerant.

4. (Original) A method as claimed in claim 3, wherein the air-conditioning system comprises an automotive air-conditioning system.

5. (Previously Presented) An apparatus for refrigerant level monitoring in a refrigerant circuit of an air-conditioning or heat-pump system having a compressor and a refrigerant which may, depending on the operating point, be operated in the supercritical range, the apparatus comprising:

at least a system for in-operation level monitoring with the compressor switched on, comprising detectors for measuring the refrigerant superheat ( $dT_{ü}$ ) at the evaporator of the system, and a calculation circuit for determining whether the measured superheat ( $dT_{ü}$ ) lies above a predetermined limiting value ( $dT_{üG}$ ), as an indication of

improper filling, wherein the detectors for measuring the refrigerant superheat ( $dT_{ü}$ ) at the evaporator comprise a first detector for measuring a temperature ( $T_{LVA}$ ) on the evaporator outlet side, of a medium led over the evaporator for the purpose of cooling the medium, and a second sensor for measuring the refrigerant temperature ( $T_{KVE}$ ) on the evaporator inlet side, and wherein the calculation circuit is programmed to determine whether the measured superheat ( $dT_{ü}$ ) lies above a predetermined limiting value ( $dT_{üG}$ ) based on a difference between the temperature ( $T_{LVA}$ ) and the temperature ( $T_{KVE}$ ).

6. (Currently Amended) An automotive vehicle, comprising:

a motor and

an air-conditioner having a refrigerant circuit including a compressor and a refrigerant comprising CO<sub>2</sub> which may, depending on the operating point, be operated in the supercritical range, and a system for refrigerant level monitoring in the refrigerant circuit comprising ~~an apparatus as defined by claim 5 a system for in-operation level monitoring with the compressor switched on, comprising detectors for measuring the refrigerant superheat ( $dT_{ü}$ ) at the evaporator of the system, and a calculation circuit for determining whether the measured superheat ( $dT_{ü}$ ) lies above a predetermined limiting value ( $dT_{üG}$ ), as an indication of improper filling.~~

wherein the detectors for measuring the refrigerant superheat ( $dT_{ü}$ ) at the evaporator comprise a first detector for measuring a temperature ( $T_{LVA}$ ) on the evaporator outlet side, of a medium led over the evaporator for the purpose of cooling the medium, and a second sensor for measuring the refrigerant temperature ( $T_{KVE}$ ) on the evaporator inlet side, and

wherein the calculation circuit is programmed to determine whether the measured superheat ( $dT_{ü}$ ) lies above a predetermined limiting value ( $dT_{üG}$ ) based on a difference between the temperature ( $T_{LVA}$ ) and the temperature ( $T_{KVE}$ ).